

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/615,293
Attorney Docket No.: Q76485

REMARKS

Claims 1-22 are pending in the application. By this Amendment, Applicant amends claim 1 to broaden the scope of the invention, claims 4 and 10 to cure a minor informality, and claim 5 is amended to further clarify the invention (for an exemplary support *see* page 4, lines 20 to 23 of the specification).

The Examiner has restricted claims 15-20 directed to a method of producing a master information carrier. Accordingly, claims 15-20 are withdrawn from consideration as being directed to a non-elected invention. Applicant cancels these non-elected claims 15-20.

Preliminary Matter

The Examiner again failed to indicate acceptance of the Drawings. Applicant respectfully requests the Examiner to indicate acceptance of the Drawings in the next office communication.

Summary of the Office Action

The Examiner rejected claims 1-4, 21, and 22 under 35 U.S.C. § 112, first paragraph, claims 4 and 10 under 35 U.S.C. § 112, second paragraph, and claims 1-14, 21, and 22 under 35 U.S.C. § 102(b) and under 35 U.S.C. § 103(a).

Rejections under 35 U.S.C. § 112, first paragraph

The Examiner has rejected claims 1-4, 21, and 22 under 35 U.S.C. § 112, first paragraph. Specifically, the Examiner has alleged that the specification fails to provide adequate support for any relationship between “the length of a scanning with the electron beam” and “the width of the track” and/or “the drawing diameter of the electron beam” (page 3 of the Office Action).

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/615,293
Attorney Docket No.: Q76485

Applicant has revised claim 1 and respectfully submits that the claim no longer contains the objected terminology. It is appropriate and necessary for the Examiner to withdraw this rejection of claim 1 and its dependent claims 2-4, 21, and 22 in view of these self-explanatory claim amendments being made herein.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 4 and 10 are rejected under 35 U.S.C. § 112, second paragraph for minor informalities. In view of the self-explanatory claim amendments being made herein, it is appropriate and necessary for the Examiner to withdraw this rejection of claims 4 and 10.

Prior Art Rejection

Claims 1-14, 21 and 22 are rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over WO 98/03972 to Ishida (hereinafter "Ishida"). Applicant respectfully traverses these rejections in view of the following comments.

Of these rejected claims, only claim 1 and 5 are independent.

Independent claim 1 recites a number of unique features including: "wherein the pattern comprises a plurality of tracks, and wherein the width of each of said plurality of tracks is greater than drawing diameter of the electron beam that forms the pattern." The Examiner contends that the condition of the relationship between the width of the track and the drawing diameter does not further limit the structure but rather further define the process and that the products being produced is the same. Accordingly, the Examiner did not give this feature any patentable weight (see pages 5-8 of the Office Action). This rejection is being traversed in view of the following comments.

Considering All Features in Claim 1

The Examiner's position is technically inaccurate in that he alleges that since the width is defined in terms of the diameter of the electron beam, this should not be considered. In accordance with MPEP § 2113, "the structure implied by the process steps should be considered when assessing the patentability of the product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." *See, e.g., In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)

For Examiner's convenience, the following case is provided. The Federal Circuit in *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834, 843-45; 23 USPQ2d 1481, 1488-90 (1992), discussed the history of the product by process claims and *explicitly* states that the USPTO "acknowledged product-by-process claims as an exception to the general rule requiring claims to define products in terms of structural characteristics. This exception, however, permitted an applicant to claim *a product in process terms*, not to acquire exclusive rights to a product already in the prior art," emphasis added. *Id.*

Accordingly, the Examiner's position is legally inaccurate in that the width can be claimed in process terms as long as the end product is different from the product already present in the prior art. There is no requirement in the MPEP that would require the Applicant to claim

AMENDMENT UNDER 37 C.F.R. § 1.111

U.S. Appln. No. 10/615,293

Attorney Docket No.: Q76485

only in numeric values. Indeed, when the process defines the product, this clearly should be considered.

This point is being demonstrated by using the following analogy. This analogy is provided by way of an explanatory example only and is not intended to limit the scope of the claims in any way. For example, assume that a nail of a certain diameter can be manufactured by being heated and then hit with a hammer. The recitation: when the heated nail is hit with a hammer three times, the width of the nail is $1/x$ of the hammer's handle and when the heated nail is hit with a hammer five times, the width of the nail is $1/y$ of the hammer's handle, clearly carries patentable weight as long as the resulting nail is different from the prior art nails. Similarly, the width of the track defined in terms of the length of scanning and the drawing diameter should be considered as the resulting product is clearly patentable over Ishida, as explained in greater detail below.

The Examiner maintains that the product produced by Ishida is identical to the product produced by the present invention as claimed. In particular, the Examiner maintains that there is no difference between the two photographs submitted as the Exhibit A (*see* page 8 of the Office Action). Applicant respectfully submits herewith Exhibit B, which is a diagram showing a difference in a burst pattern plot between the conventional technique and the technique set forth in claim 1.

The diagram depicted in Exhibit B was created by converting each of the SEM images in Exhibit A into a binary image. The coordinates of the points represent edges extracted from the binary image, and the coordinates were plotted to create the diagram. In the diagram, red points

AMENDMENT UNDER 37 C.F.R. § 1.111

U.S. Appln. No. 10/615,293

Attorney Docket No.: Q76485

(○) represent a burst pattern according to the conventional technique (No. 1 in Exhibit A), and black points (●) represent a burst pattern according to the invention claimed in claim 1 (No. 2 in Exhibit A). As clearly illustrated in the diagram, the upper and lower portions of the pattern according to the conventional technique are arcuate, but those of the pattern according to the invention claimed in claim 1 are substantially straight. Hence, it may be possible to achieve a more efficient servo characteristics when the pattern is transferred onto a slave medium.

Accordingly, the elements set forth in Ishida are clearly different from the elements set forth in claim 1, as dictated by the evidence *i.e.*, Exhibit B.

Anticipation/Obviousness over Ishida

Finally, the Examiner maintains that Ishida renders obvious the substantially straight end portion by its disclosure that “the above problem [rounded trapezoid protruding portions] can be solved by using an advanced photolithography technique that can realize sufficient accuracy and resolution over the large area” (see col. 16, lines 15 to 20). The Examiner maintains that this renders obvious the product set forth in claim 1.

First, Applicant respectfully submits that Ishida fails to teach or suggest the width of the track, as set forth in claim 1. Moreover, Applicant respectfully submits that if the Examiner believes that the disclosure of “advanced photolithography techniques” in itself would render it obvious to one of ordinary skill in the art how to form rectangular protrusions when the width of the track is not larger than 0.3 μm . Clearly then, the Examiner could find another reference that would disclose “advanced photolithographic techniques” for producing rectangular protrusions without rounded end portion of the track having the width of 0.3 μm or less.

Ishida is inappropriate as a reference for the “advanced photolithographic techniques” as it does not describe these techniques but only indicates that “...even if the above problems are solved, a substantially expensive exposure machine, resist material, developing liquid and other things are necessary” (col. 16, lines 20 to 23). Ishida goes on to advocate its inexpensive method with trapezoidal protrusion as opposed to advanced photolithographic techniques. Clearly then, Ishida teaches away from forming the rectangular end portions. Moreover, Ishida does not disclose using the “advanced lithographic techniques” with a track having the width of less than 0.3 μm . Accordingly, claim 1 is not anticipated (and is not obvious over) Ishida.

Claims 2-4, 21, and 22 are patentable over Ishida at least by virtue of their dependency. Moreover, claims 2-4 are directed to the structural limitation of the width of the track defined in the process terms, which is appropriate and permitted, as explained in greater detail above. In view thereof, it is appropriate and necessary for the Examiner to consider the features in claims 2-4.

Next, this rejection is addressed with respect to independent claim 5. Claim 5, among a number of unique features, recites: “wherein the pattern comprises a plurality of protruding portions, upper surface of each of said protruding protrusions has a rectangular shape.”

Ishida discloses that though the section profile of the protruding portion is simplified with a rectangular shape in FIG. 3, *it is difficult to form such a rectangular section over a large area in a real master information carrier made using regular photolithography*. The section profile of the protruding portion *usually assumes a trapezoidal shape*, where the length of the upper side differs from the length of the lower side, *not a rectangular shape*. In addition, *the edges of*

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/615,293
Attorney Docket No.: Q76485

the upper side at the surface of the trapezoid become rounded in general (col. 15, lines 59 to 68). Accordingly, in Ishida, the protruding portions in both configurations have a *trapezoidal shape* (col. 16, lines 38 to 50). Moreover, as explained above, Ishida mention of the advanced lithographic techniques cannot render at least this unique feature of claim 5 obvious.

For at least these reasons, claim 5 is patentably distinguishable (and is patentable over) Ishida. Claims 6-14 are patentable at least by virtue of their dependency. Moreover, the Examiner failed to address the unique features of the dependent claims 6-14. The dependent claims 6-14 also include various other structural aspects which provide *separate bases for patentability*, which are not addressed by the Examiner.

Incomplete Office Action

Since the Office Action fails to address the features recited in the dependent claims 6-14, we suggest also presenting the following arguments to the Examiner.

In every Office Action, each pending claim should be mentioned by number, and its treatment or status given. MPEP 707.07(i). However, the features of claims 6-14 were not addressed in the body of the Office Action dated April 20, 2005. The Examiner is respectfully requested to issue a new Non-Final Office with a new restart date pursuant to MPEP 710.06, where the features of claims 6-14 are addressed.

New Claims

In order to provide more varied protection, Applicant adds claims 23 and 24. Claim 23 is patentable at least by virtue of its recitation of “wherein the electron-beam scanned pattern has a

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/615,293
Attorney Docket No.: Q76485


drawing diameter less than the width of each of said plurality of tracks” and claim 24 at least by virtue of its dependency on claim 23.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Nataliya Dvorson
Registration No. 56,616

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: October 19, 2005

Attorney Docket No.: Q76485